

Original Articles: Case Study

ANALYSIS OF NURSING CARE IN STROKE PATIENTS WITH THE PROVISION OF ELEVATION HEAD POSITION TO OVERCOME NURSING PROBLEM RISK OF INEFFECTIVE CEREBRAL PERFUSION AT RSI SURABAYA A. YANI

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Abstract

Introduction: Stroke treatment must be done quickly and precisely because the longer the stroke is not treated immediately, the higher the severity of the stroke. One of the complications of stroke is cerebral circulation disorders which cause several symptoms including cerebral tissue hypoxia.

Objective: This study aimed to analyze nursing care for stroke patients by giving elevated head positions to overcome the nursing problem risk of ineffective cerebral perfusion at RSI Surabaya A. Yani.

Methods: This research design is a case study with Mrs. M who has nursing problems at risk of ineffective cerebral perfusion. Data collection was done directly by interview, observation, and physical examination of Mrs. M and her family directly. Nursing interventions for providing elevated head positions are carried out for three days for 30 minutes daily.

Results: The results showed that after implementation there was a significant increase in oxygen saturation in Mrs. M on the first day SpO₂ 95%, on the second day SpO₂ 97%, and on the third day SpO₂ 99%. In addition to an increase in oxygen saturation, there was an increase in the outcome criteria to be achieved, namely the level of consciousness on a scale of 4 (moderately improved), headache on a scale of 4 (moderately decreased), average blood pressure values on a scale of 4 (moderately improved), and awareness on a scale of 4 (moderately improved).

Conclusions: Giving an elevated head position is effective in increasing oxygen saturation in stroke patients with nursing problems of ineffective cerebral perfusion risk. Room nurses can perform elevation head positioning to improve oxygen saturation in stroke patients with nursing problems at risk of ineffective cerebral perfusion.

INTRODUCTION

Stroke is a disorder of nerve function caused by impaired blood flow in the brain that can occur suddenly within a few seconds or quickly within a few hours with symptoms or signs according to the disturbed area. If the problem of cerebral circulation disorders in stroke patients is not treated immediately. In that case, the brain that is not supplied with blood that transports oxygen can cause tissue hypoxia, and metabolism in the brain is also disturbed which can cause changes in the function

of the affected brain until death (Trisila et al., 2022). The risk of ineffective cerebral perfusion is a problem that often occurs in stroke patients. The risk of ineffective cerebral perfusion is when individuals experience decreased blood circulation to the brain (Muntiasari, 2021).

According to the American Heart Association (AHA, 2015), the incidence of stroke in men aged 20-39 years is 0.2% and women are 0.7%. At the age of 40-59 years, the rate of stroke in women was 2.2% and men 1.9%. Based on data from Basic Health Research, the prevalence of stroke in Indonesia based on the diagnosis of health workers was 7 per mile in 2013 increasing to 10.9 per mile in 2018, the prevalence of stroke cases in East Java in 2018 was 1.24% per 1000 population, while the prevalence of stroke in Surabaya was (>1,357 cases) (Indonesian Ministry of Health, 2019). Initial observations made in the Makkah room of RSI Surabaya A. Yani were obtained in August-September 2022 there were 118 stroke cases with priority diagnoses of ineffective cerebral perfusion risk 48%, physical mobility disorders 42%, and skin integrity disorders 10%.

Stroke risk factors can be categorized as controllable and uncontrollable factors. Controllable risk factors are hypertension, cholesterol, diabetes mellitus, obesity, lifestyle, stress, smoking, and alcohol, while uncontrollable risk factors are age, gender, and family history of stroke (Martono et al., 2022).

Stroke treatment must be done quickly and precisely because if the stroke is not treated immediately, the severity of the stroke will be higher. The risk of disability that will be obtained will get worse due to the expansion of dead neuron cells and the infarction area in the brain is expanding, it can even cause impaired consciousness and death (Kusuma & Anggraeni, 2019). One of the complications of stroke is impaired cerebral circulation which will cause several symptoms including hypoxia of cerebral tissue (Pertami et al., 2019).

One of the nursing actions taken to help manage patients after a stroke attack is therapy to regulate the position of the head elevation (Mustikarani & Mustofa, 2020). The supine position accompanied by head up or head elevation shows that the return flow from the inferior to the right atrium is quite good because vascular resistance and right atrial pressure are not too high so that the volume of blood entering (venous return) to the right atrium is quite good and the right ventricular filling pressure (preload) increases, which can lead to an increase in stroke volume and cardiac output (Larasati & Rahmania, 2021). An elevated head position can increase blood flow in the brain and maximize cerebral tissue oxygenation. According to the results of previous research from Pakaya & Nurliah (2021), an effect of head elevation position on oxygen saturation in nonischemic stroke patients because it can facilitate increased blood flow to the cerebrum and maximize oxygenation to cerebral tissue.

Based on the above background, the authors are interested in applying the application of elevation head positioning to oxygen saturation to overcome the nursing problem risk of ineffective cerebral perfusion in stroke patients at RSI Surabaya A. Yani.

METHODS

Study Design

This analysis uses a case study with a descriptive design that describes case management in applying evidence-based nursing practice using a nursing care process approach (Nursalam, 2020).

Settings

The location of this nursing care analysis was carried out in the Makkah room of RSI Surabaya A.Yani. The length of nursing care analysis on the client is 3 days, from November 1-3, 2022.

Research subject

This nursing care analysis was carried out on a client (Mrs. M) who had a stroke with a nursing problem of ineffective cerebral perfusion risk in the Makkah room of RSI Surabaya A. Yani.

Instruments

This study uses a nursing care format that has been reviewed by the University of Nahdlatul Ulama Surabaya and SOP to implement the action of providing an elevated head position.

Data collection

Data collection tools on clients use nursing care sheets using observation and interviews and client medical records.

Data Analysis

The collected data was analyzed using descriptive analysis methods and then explained through a discussion of the results of the descriptive analysis.

Ethical Consideration

The implementation of this case study has received approval from the respondents, their families, the hospital (RSI Surabaya A. Yani), and the University of Nahdlatul Ulama Surabaya.

RESULTS

Nursing Assessment

The assessment was conducted on November 1, 2023, on Mrs. M, aged 65. The results of the anamnesis obtained by Mrs. M's family said Mrs. M had a history of hypertension and cholesterol. Mrs. M said the main complaint felt at this time was dizziness. Mrs. M also said she was often sleepy and yawned. Mrs. M's family said October 31, 2022, at 10.00 am suddenly while walking Mrs. M felt dizzy and the right side of her body could not be moved until finally Mrs. M fell, 10.45 Mrs. M was taken to the emergency room of RSI Surabaya A. Yani to seek help. Mrs. M's family said Mrs. M's late mother had a history of hypertension. Mrs. M's family said Mrs. M did not have any allergies to drugs or food. The family said Mrs. M often consumed fatty, salty, and fried foods.

The results of TTV measurements on Mrs. M were found to have a BP of 156/91mmHg, RR 22 x/min, N 95 x/min, and S 36.9⁰ C. The results of the physical examination B1 (Breathing) on Mrs. M showed SpO2 93%, no chest retraction, no nasal lobe breathing, no cyanosis, vesicular auscultation, and sonorous percussion. The results of the physical examination of B3 (Brain) found that Mrs. M's

level of consciousness was apathetic, and Mrs. M's GCS value (E 3, V 4, M 6). The results of the physical examination B6 (Bone) found that Mrs. M had regional hemiplegic paralysis of the right body. Right upper limb muscle strength 1111, left upper limb muscle strength 4444, right lower limb muscle strength 1111, and left lower limb muscle strength 4444. The results of medical record observation showed that the results of Mrs. M's head CT scan showed ischemia. Mrs. M's cholesterol measurement was high at 275 mg/dL.

Nursing Diagnosis

Based on assessment and analysis, Mrs. M experienced nursing problems of ineffective peripheral perfusion risk associated with stroke disease.

Nursing Intervention

Nursing interventions were carried out for 3 days guided by SLKI and SIKI and evidence-based in nursing giving elevation head position. After the nursing intervention is carried out, it is hoped that cerebral perfusion in Mrs. M can be resolved with the criteria for the results of the level of consciousness from scale two moderately decreasing to scale four increasing, headache from scale two moderately increasing to scale four decreasing, the average value of blood pressure from scale two moderately worsening to scale four improving, awareness from scale two worsening to scale four improving. The superior nursing action plan that will be carried out on Mrs. M is to position the head elevation for 30 minutes.

Nursing Implementation

The excellent nursing implementation given to Mrs. M in the form of positioning the head elevation 30° and 45° for 30 minutes was carried out for three consecutive days.

On November 1, 2022, at 08.45 before taking action, the nurse explained to Mrs. M and her family about the provision of elevation head positioning therapy as a nonpharmacological technique and its benefits. The nurse also measured Mrs. M's TTV before being given the elevation head positioning action with the results of BP 156/91 mmHg, RR 22 x/min, N 95 x/min, S 36.9⁰ C, SpO₂ 93%. Then the nurse positioned Mrs. M's head in elevation for 30 minutes. Then measure the TTV again with the results of BP 152/87 mmHg, RR 21 x/min, N 93 x/min, S 36.8⁰ C, SpO₂ 95%.

On November 2, 2022, at 15.00 the nurse took TTV measurements of Mrs. M before being given the elevation head positioning action with the results of BP 150/88 mmHg, RR 21 x/min, N 91 x/min, S 36.7⁰ C, SpO₂ 96%. Then the nurse positioned Mrs. M's head in elevation for 30 minutes. Then measure the TTV again with the results of BP 150/87 mmHg, RR 20 x/min, N 93 x/min, S 36.8⁰ C, SpO₂ 97%.

Implementation of the last day on November 3, 2022, at 08.20 The nurse measured Mrs. M's TTV before being given the elevation head positioning action with the results of BP 148/86 mmHg, RR

21 x/min, N 92 x/min, S 36.7⁰ C, SpO₂ 97%. Then the nurse positioned Mrs. M's head in elevation for 30 minutes. Then the TTV again with the results of BP 143/84 mmHg, RR 20 x/min, N 90 x/min, S 36.8⁰ C, SpO₂ 99%.

Nursing Evaluation

After carrying out superior nursing implementation by positioning the head elevation to Mrs. M, the nurse conducted a final evaluation. On November 1, 2022, the evaluation was obtained Mrs. M said she still felt dizzy, GCS value (E 3, V 4, M 6), apathetic level of consciousness, BP 152/87 mmHg, RR 21 x/min, N 93 x/min, S 36.8⁰ C and SpO₂ 95%. The level of consciousness is still a scale 2 moderately decreased, the headache is still a scale 2 moderately increased, the average blood pressure value is still a scale 2 moderately worsened, and consciousness is still a scale 2 moderately worsened. Analysis found that the problem had not been resolved so the superior intervention was continued.

On November 2, 2022, an evaluation was obtained Mrs. M said the dizziness had begun to disappear, the GCS value (E 4, V 5, M 6), comp cosmetic consciousness, BP 150/87 mmHg, RR 20 x/min, N 93 x/min, S 36.8⁰ C, SpO₂ 97%. The level of consciousness has improved enough on Scale four, the headache is enough on Scale three, the average value of blood pressure is enough on Scale three, and awareness is enough on Scale four. The analysis found that the problem was partially resolved so the superior intervention was continued.

On November 3, 2022, an evaluation was obtained Mrs. M said the dizziness had disappeared, GCS value (E 4, V 5, M 6), comp cosmetic consciousness, BP 143/84 mmHg, RR 20 x/min, N 90 x/min, S 36.8⁰ C, SpO₂ 99%. The level of consciousness has improved enough to scale four, the headache has decreased enough to scale four, the average blood pressure value has improved enough to scale four, and awareness has improved enough to scale four. The analysis found that the problem was resolved so the superior intervention was stopped.

DISCUSSION

Nursing Problem Risk of Ineffective Cerebral Perfusion

Mrs. M aged 65 years had a stroke. Mrs. M has a history of hypertension and cholesterol. Mrs. M said her main complaint was dizziness. Mrs. M also said she often felt sleepy and yawned. The family said Mrs. M often consumes fatty, salty, and fried foods. The results of TTV measurements on Mrs. M were obtained the results of BP 156/91mmHg, RR 22 x/min, N 95 x/min, S 36.9⁰ C. The results of the physical examination B1 (Breathing) on Mrs. M showed a SpO₂ of 93. The results of the physical examination of B3 (Brain) found Mrs. M's level of consciousness was apathetic, and Mrs. M's GCS value (E 3, V 4, M 6). The results of the physical examination of B6 (Bone) found that Mrs. M had regional hemiplegic paralysis of the right body.

Stroke is a disease caused by a narrowing of the blood vessels in the brain so that the flow of blood and oxygen to the brain is obstructed or even stopped. The blockage can damage the nervous

system which stops the blood and oxygen supply from being damaged and even dead so that the organs associated with the nervous system will be complex or unable to move (Dabalok et al., 2022). According to Adi et al. (2022), hypertension and hypercholesterolemia are factors that cause stroke in a person. According to Rahmayani (2021), the clinical manifestations of stroke are paralysis, severe headache, decreased consciousness, and visual disturbances.

The author argues that a person who has a stroke will experience a decrease in blood supply and oxygen to the brain so the patient will experience a decrease in consciousness and drowsiness. Someone who has a stroke must immediately get medical help, this aims to prevent further severity and risk of brain death.

Based on the assessment and data analysis that has been carried out on Mrs. M, the nursing diagnosis that arises is the risk of ineffective cerebral perfusion. According to the primary nursing diagnosis in stroke patients is the risk of ineffective cerebral perfusion (Larasati & Rahmania, 2021). Decreased oxygen supply to cerebral tissue can cause decreased consciousness. Hypoxia of cerebral tissue that is not treated immediately will result in disability and even death in a person (Martono et al., 2022). The author argues that accuracy in determining and prioritizing diagnoses in a case of emergency such as stroke will be able to help the patient from the resulting disability and even the risk of death.

The leading nursing intervention given to Mrs. M is to position the head elevation. Interventions in the form of elevated head positioning were chosen based on guidelines from SIKI (Indonesian Nursing Intervention Standards) and EBN (Evidence-Based in Nursing). This is supported by research conducted by Trisila et al., (2022) where there is an effect of head elevation position.) where there is an effect of head elevation position on oxygen saturation in hemorrhagic and non-hemorrhagic stroke patients. Research conducted by Mustikarani & Mustofa, (2020) also shows that giving head elevation position is proven to facilitate increased blood flow to the cerebrum and maximize oxygenation to cerebral tissue.

The author argues that providing head elevation interventions to stroke patients to improve blood supply to brain tissue is an appropriate action intervention because cerebral perfusion will be adequate and oxygen will be supplied optimally to increase oxygen saturation in stroke patients.

The implementation of giving head elevation positions 30° and 45° to Mrs. M was carried out for 3 days, namely on November 1, 2, and 3, 2022 with a duration of 30 minutes each. According to research conducted by Larasati & Rahmania (2021), giving head elevation positioning action to stroke patients for 30 minutes showed an increase in oxygen saturation compared to before the action was given. The results of similar research conducted by (Gregori-Pla et al., 2019) also explained a significant increase in oxygen saturation in stroke patients after giving an elevation head position for 30 minutes. The author argues that the implementation of giving elevated head positions to stroke patients must be on time and procedure so that the objectives and benefits of giving elevated head positions can be obtained and maximally felt by stroke patients.

Nursing evaluation was carried out on Mrs. M after the implementation of giving elevation position for three consecutive days the results showed a significant increase in oxygen saturation where the first day SpO₂ was 95%, the second day SpO₂ 97%, and the third day SpO₂ 99%.

Research conducted (Pakaya & Nurliah, 2021) showed the results of an increase in oxygen saturation in stroke patients after being given an elevated head position compared to stroke patients who were not given an elevated head position. The author argues that elevation head positioning is very beneficial for stroke patients in increasing blood supply to the brain so that SpO₂ to cerebral tissue increases. This will help prevent stroke patients from experiencing cerebral tissue hypoxia and the negative impacts caused.

Analysis of Giving Elevated Head Position to Oxygen Saturation to Overcome Nursing Problems of Risk of Ineffective Cerebral Perfusion in Stroke Patients

The results after superior implementation in the form of elevation head positioning on Mrs. M on the first day found Mrs. M said she still felt dizzy, GCS value (E 3, V 4, M 6), apathetic level of consciousness, BP 152/87 mmHg, RR 21 x/min, N 93 x/min, S 36.8⁰ C and SpO₂ 95%. The second day evaluation found Mrs. M said the dizziness had begun to disappear, GCS value (E 4, V 5, M 6), cosmetic consciousness, BP 150/87 mmHg, RR 20 x/min, N 93 x/min, S 36.8⁰ C and SpO₂ 97%. While the third day obtained the results Mrs. M said the dizziness had disappeared, the GCS value (E 4, V 5, M 6), consciousness was cosmetic, BP 143/84 mmHg, RR 20 x/min, N 90 x/min, S 36.8⁰ C and SpO₂ 99%. Mrs. M's oxygen saturation increased significantly for three consecutive days, where the oxygen saturation value on the first day was only 95% to 99% after the superior head elevation intervention.

One of the complications of stroke is impaired cerebral circulation will causes several symptoms including cerebral tissue hypoxia (Pertami et al., 2019). One of the nursing actions taken to be able to help manage patients after a stroke attack is therapy to regulate the position of the head elevation (Mustikarani & Mustofa, 2020). Elevation head position can increase blood flow in the brain and maximize oxygenation of cerebral tissue (Larasati & Rahmania, 2021). The supine position accompanied by head up or head elevation shows that the return flow from the inferior to the right atrium is quite good because the vascular resistance and right atrial pressure are not too high so that the volume of blood entering (venous return) to the right atrium is quite good and the right ventricular filling pressure (preload) increases, which can lead to an increase in stroke volume and cardiac output (Gregori-Pla et al., 2019). According to the results of previous research by Trisila et al. (2022) where there is an effect of head elevation position on oxygen saturation in hemorrhagic and non-hemorrhagic stroke patients because it can facilitate increased cerebral blood flow and maximize oxygenation to cerebral tissue. Research conducted by Larasati & Rahmania (2021) showed the results of an increase in oxygen saturation in stroke patients after being given head elevation compared to stroke patients who were not given head elevation.

The author argues that stroke treatment must be carried out quickly and precisely because if the longer the stroke is not treated immediately, the severity of the stroke will be higher, and the risk of disability that will be obtained will get worse due to the expansion of dead neuron cells and the infarction area in the brain is expanding, it can even cause impaired consciousness and worse is death. Nursing actions such as providing elevated head positions are very helpful for patients with stroke to increase adequate blood supply and oxygen to the brain so that the healing process and prevention of the risk of complications such as disability will decrease and even be avoided.

LIMITATIONS

No limitation.

CONCLUSION

The results of nursing care on Mrs. M were obtained during the assessment process Mrs. M had a stroke and said her head was dizzy, apathetic consciousness, GCS values (E 3, V 4, M 6), and SpO₂ 93%. Mrs. M's main diagnosis is the risk of ineffective cerebral perfusion associated with stroke. The leading intervention given to Mrs. M was elevation head positioning to improve oxygen saturation. Implementation is given for 3 days. The final day evaluation found that the dizziness had disappeared, GCS values (E 4, V 5, M 6), composure, and SpO₂ 99%.

AUTHOR CONTRIBUTION

Authors' contributions: All the authors contributed equally to the study.

ORCHID

Nur Hamidah Maghfiro : None.

Erika Martining Wardani : None.

Rusdianingseh : None.

Abdul Muhith : None.

CONFLICT OF INTEREST

The authors declare that there was no conflict of interest.

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